

pattern can be converted into a specified bit pattern by given large cooperation with the predetermined bit pattern” which the examiner deems not to be clear, please note that, as will be further discussed hereinbelow, the particular portions of the specification providing an adequate explanation of the “hows and whys” of the process that takes place will be given. Further note that it is not the role of the claims to explain the processing involved in the invention. See *S3 Inc. v. Nvidia Corp.*, 259 F.3d 1364, 59 U.S.P.Q.2d 1745 (2001), in which the Federal Circuit states:

The district court objected that the claims are not self-contained in that they do not explain ‘video display information is produced by the controller’. We agree that the claims are not a self-contained explanation of every step. This is not the role of claims.

The purpose of claims is not to explain the technology or how it works, but to state the legal boundaries of the patent grant. A claim is not ‘indefinite’ simply because it is hard to understand when viewed without benefit of the specification. At paragraphs 42 and 43.

To fully address any possible confusion the examiner may have, reproduced hereinbelow is claim 1, with the terms deemed indefinite by the examiner underlined and the elements disclosed in the specification referencing the claimed terms in parentheses, so as to better enable the examiner to ascertain that there is no indefiniteness with respect to the pending claims. Furthermore, discussion is to be had hereinbelow for explaining each of the terms and the support therefor in the specification. This process is repeated, to a lesser extent, for claim 9, as claims 1 and 9 are representatives of the other independent claims pending in the application.

### Detailed Discussion of the Claims

1. An apparatus for embedding a watermark into contents data, comprising:  
pattern generating means (14 in Fig. 1) for generating bits representing a predetermined bit pattern corresponding to a watermark;  
specified-bit detecting means (11 in Fig. 1) for detecting bits in original picture data as specified bits into which a watermark can be embedded;  
calculating means (12 in Fig. 1) for calculating a desired-bit pattern represented by the specified bits in response to the predetermined bit pattern and a specified bit pattern, wherein the desired bit pattern can be converted into the specified bit pattern by given logical operation with the predetermined bit pattern; and  
mixing means (15 in Fig. 1) for changing the specified bits to represent the desired bit pattern to convert the original picture data into watermark-embedded picture data.

In claim 1, "a desired bit pattern represented by the specified bits" means a desired bit pattern which should be finally represented by the specified bits.

It is well-known in the art of cryptography that an encryptor side generates an encrypted pattern "A" through logical operation (for example, Exclusive-OR) between an original pattern "B" and a key pattern "C" and transmits the encrypted pattern "A"; and a decryptor side has the key pattern "C" and recovers the original pattern "B" through logical operation (for example, Exclusive-OR) between the transmitted encrypted pattern "A" and the key pattern "C".

The desired bit pattern, the predetermined bit pattern, and the specified bit pattern in claim 1 are in a relation similar to that among the encrypted pattern "A", the original pattern "B", and the key pattern "C" as noted above. Furthermore, "the desired bit pattern can be converted into the specified bit pattern by given logical operation with the predetermined bit pattern" in claim 1 corresponds to the function of the above decryptor side.

Claim 1 is supported by the specification from page 17, line 3 to page 25, line 4.

As disclosed on page 22, lines 14 and 15 of the specification, the fixed-pattern generator 14 which corresponds to the pattern generating means in claim 1 produces, for example, 9 bits in a fixed pattern for each of the watermark-embedding addresses.

The specified-bit detecting means in claim 1 corresponds to the pixel specified-bit detector 11, and is supported by the specification on page 18, line 4 to page 20, line 18. For example, as shown in Fig. 4 (page 18, lines 20-25 of specification), when the desired strength of an embedded watermark relative to an original picture is the second smallest, the pixel specified-bit detector 11 sets the number N to 2 and therefore designates and selects only the two lower bits among the 8 bits per luminance pixel as bits into which a watermark fragment can be embedded. The pixel specified-bit detector 11 outputs the designated luminance pixel bits (the selected luminance pixel bits) to the exclusive-OR device 12 (page 20, line 16-18 of specification). The specified bits in claim 1 therefore mean the designated luminance pixel bits (the selected luminance pixel bits) as noted above.

The calculating means in claim 1 corresponds to the exclusive-OR device 12, and is supported by the specification on page 23, line 1 to page 24, line 2. For each of the watermark-embedding addresses, the processing section of the exclusive-OR device 12 executes exclusive-OR operation between the watermark information bits (the fixed-pattern bits) and the specified-pattern bits on a bit-by-bit basis. The processing section forcibly sets or equalizes the corresponding luminance pixel values to the result of the exclusive-OR operation, for example, "11111111" (page 23, lines 8-15 of specification).

The desired bit pattern in claim 1 corresponds to the result of the exclusive-OR operation noted above. Specifically, the processing section of the exclusive-OR device 12 calculates a 9-bit pattern, which can be converted into the specified bit pattern (see Fig. 8) by an exclusive-OR operation with the fixed bit pattern (see Fig. 7). The processing

section forcedly sets or equalizes the corresponding luminance pixel values to the calculated 9-bit pattern (page 23, lines 20-25 of specification). The desired bit pattern in claim 1 therefore corresponds to the calculated 9-bit pattern noted above.

The mixing means in claim 1 corresponds to the watermark mixer 15, and is supported by the specification on page 24, lines 3-21. The watermark mixer 15 rewrites or updates the designated luminance pixel bits into agreement with the output data from the exclusive-OR device 12. As a result, the calculated 9-bit pattern (above-noted desired bit pattern) is embedded into each of portions of the original picture data which correspond to the watermark-embedding addresses (page 24, lines 914 of specification). Thus, the watermark mixer 15 outputs the updating-resultant designated luminance pixel bits, and outputs the other bits of the original picture data without changing them, i.e., the other bits are outputted as they are. This results in the updating-resultant designated luminance pixel bits and the other bits outputted from the watermark mixer 15 composing the watermarked picture information, that is, watermark-added picture data (page 24, lines 14-21 of specification).

In view of the above, it is respectfully submitted that there is nothing indefinite about claims 1-4.

As for claims 9-12 and 15-20, please note that each of independent claims 9 and 12 corresponds to the embodiments of Figs. 10-16. The first portion and the second portion recited in claim 9 correspond to the former portion "A" and the latter portion "B" in Fig. 14 which are described on page 43, line 14 to page 44, line 12 of the specification.

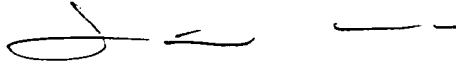
As for the other questionable points raised in claims 9 and 12, the examiner's attention is respectfully directed to the below reference-element added version of claim 9. With the different recited means now referenced to corresponding elements in the specification, it should be apparent that there is nothing indefinite about claim 9, and the other pending independent claims under consideration.

9. An apparatus for embedding a watermark into contents data, comprising:  
pattern generating means (114 in Fig. 10) for generating bits representing a fixed bit pattern;  
embedding-position deciding means (116 in Fig. 10) for deciding a watermark-embedding position with respect to original picture data;  
random-number generating means (113 in Fig. 10) for generating random-number data representing a random number;  
calculating means (112, 115 in Fig. 10) for calculating a desired bit pattern represented by specified bits in response to the fixed bit pattern and a specified bit pattern, the specified bits being among bits in a first portion of the original picture data which corresponds to the watermark-embedding position, wherein the desired bit pattern can be converted into the specified bit pattern by given logical operation with the fixed bit pattern;  
operation means (112 in Fig. 10) for executing given logical operation between watermark data and the random-number data; and  
mixing means (117 in Fig. 10) for changing the specified bits to represent the desired bit pattern, and for embedding a result of the given logical operation in a second portion of the original picture data which corresponds to the watermark-embedding position and which adjoins the first portion of the original picture data.

#### Summation

In sum, per the above, it is believed that all of the alleged indefiniteness concerns raised by the examiner have been addressed. Accordingly, applicants respectfully submit that there is nothing indefinite about the pending claims. Accordingly, the rejection of the pending claims under 35 U.S.C. 112, second paragraph, is respectfully requested to be withdrawn, and the case be passed to issue at an early date.

Respectfully submitted,



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Louis Woo, RN 31,730  
Law Offices of Louis Woo  
717 North Fayette Street  
Alexandria, Virginia 22314  
(703) 299-4090

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